

【德】赫尔穆特·麦尔 (Helmut Maier) 译著

Introduction to Nature's Economic and Financial System

自然界经济金融系统研究： 基于对人类社会和相关政策影响的视角

*Features, Impact on
Human Society and Politics*



西南财经大学出版社
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本书首先介绍了自然界经济金融系统金融系统的特点，构建并解释了一个自然界经济金融系统的投入-产出表，分析了生物因何为生命提供能生存下去的“资金的“资金”。其次，本书通过分析自然界经济金融系统和人类经济金融系统间的分歧和目，介绍和解释了世界人口的拥挤口的拥挤现象、人口老龄化、移民、贫困、失业、物种灭绝、区域破坏和气候变化等高系统反作用于人类经济行为的问题为的问题。最后，本书分析了造成自然界经济金融系统和人类经济金融系统间显著差异同时从人类社会的未来社会的未来行为走向的角度分析了如何应对目前存在的分歧和挑战，并列出了两个方案以供读者反“适应更高级的自然，高级的自然系统”和“信任更高级的人类灵活性”。本书研究方法独特，视角新颖，具有相当高的学术价值，值得一读。

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前言

我一直试图这样介绍自然界经济金融系统，把它形容为一场在自然村庄内的旅行，但迄今为止我也无法确定这个村庄的存在性。所以我非常高兴读者们可以陪我一起旅行，一起探索，一起验证，一起在这场精彩刺激的探究过程中获得一些过于奇妙的结果。这个研究始于一场巧合。2002年9月我对中国成都的西南财经大学（SWUFE）进行了学术访问，这里不妨向读者介绍一下我所遇的偶然事件。首先我要说明这不是我第一次来到中国，但是在1995年之后的中国之行里，我爱上了中国的市场，一有空就去逛，特别是逛食品市场，我喜欢各种各样的蔬菜、水果、坚果、肉类、鱼类和调料，这些对我来说都是新鲜而有趣的。而且我也非常喜欢那些中国的普通百姓，他们对我非常友善。一天清晨我外出时，发现菜场上的农民们正在用极其简单的工具摆放食品，他们早出晚归，很少休息。我被他们的辛勤劳作和娴熟技巧深深震撼了，也被他们的谦逊有礼打动了。我下意识地用相机拍照，但是很快就阻止了自己，害怕打扰这种景象。所以我静静地用自己的眼睛记录我的感受，然后给家人和一些上了年纪的亲人们写信叙述了这一切。我看到了鸡鸭和兔子关在笼子里，还看到了大小不同的鱼。我还激动地看到勤劳善良的人们挑选食品、讨价还价、售卖、屠宰并按顾客的要求烹调一些食物。经过一个肉摊时，我注意到一位年轻的女卖家正一手提着一只漂亮的大公鸡向来往人群吆喝售卖，其中一只略壮一些，它们的头朝下，脚上有条纹，正拼命挣扎试图逃脱，但是没有成功。渐渐地它们也停止了扑腾，试图把头调过来朝上。强壮一些的公鸡第一次成功了，它的头和脚一样高，这个高度足以用嘴啄到主人抓它的那只手。我想主人当然会警惕起来，如果鸡啄她，她就会松开手，鸡会落到地上。但是这只鸡并没有啄她，她也没有保护自己的手。为什么鸡不啄卖家的手指？为什么卖家不保护自己的手呢？我不能通过经验知识回答第二个问题，我对鸡的行为也不了解。到此时为止，顾客还没有做出挑选。我又观察第二只公鸡，第二只公鸡不能维持现在的动作了，它的头缓缓地低下来，再次尝试抬起头，但又失败了，所以它只能停在那个不能挣脱的位置上。强壮的公鸡的头也很快低了下来，我注意到它的眼睛和喙还是张开的。为什么它不利用最近的几秒钟啄卖家呢？这时我得到了经济学答案或者说证据：因为它无法保持头部昂起一定的时长，所以才不啄卖家。如果啄会丧失更多的能量，但是它把最后一点能量（钱）用在了保持头昂起一定的高度。一个本能的直觉划过我的脑海——去鉴别能量和金钱！几乎同时，另一只公鸡的头也垂下来了，它再次扑腾着想抬起头，结果还是徒劳无功地垂下了。顾客等到这一刻才结束讨价还价，他两只都买了。他掏出一张大票子，拿回了找的零钱。我以为这两只鸡会很快被宰杀，正在犹豫是否继续观看这血腥的画面。但是这个

顾客并没决定杀鸡，而是把两只鸡装在自行车后面的篮子里，然后骑回了家，可能是想带回去和母鸡配种孕育小鸡。所以，它们用最后的能量抬起了高贵的头颅，而没有啄卖家，现在这最后的能量拯救了它们的生命。在自然界中，能量是否能够作为一种人类货币的等价物呢？自从这件事发生之后，这个思想就伴随我直至今日。我不能逃避它的出现，它创造了一座桥梁，使我能步入自然界的经济金融系统，这也就是我开头提到的未知的村庄，现在我们知道了，它就是环境，就是自然，我希望读者朋友能陪伴我一起探索它的奥秘。

同样是在2002年9月的成都，我集中自己全部的精力绘制了第一份完整的草图。2003年8月，在德国柏林召开的第54届国际统计研究年会上，我展示了部分研究结果，名为“什么是自然界的货币等价物？运用享乐主义方法得到的结果”。令我非常高兴的是我最小的儿子10岁时就可以理解我的思想，并自己画了一幅画来支持我的第一次讲演，现在我还依然在介绍时使用这幅画。2003年9月，在北京中国人民大学交流访问期间，我进一步展开了相关的研究工作。利用2004年4月到9月的学术假期，我先后来到俄罗斯圣匹兹堡财经大学、美国内华达大学、内罗毕联合国人居署和乌克兰基辅国家经济大学，在此期间我能够继续深入研究，并和这些大学的师生们探讨目前研究的进度，我也因此获得了很多有用的评价和提问，这些都鼓励我在这条路上继续前行，继续探索。与此同时，我也陆续在一些国际学术会议上，展示了关于自然界运行良好的经济金融系统的思想，包括在明尼阿波利斯、巴黎、普拉亚、北京举行的一些会议以及在波兰举行的欧盟苏格拉底项目。关于现在研究的进展情况，在2005年9月和2006年3月，我又多次访问了西南财经大学（SWUFE）并举行了几次讲座。为什么提到这些呢？简单地说，就是想告诉读者，如果没有那么多来自各地的有影响力的朋友的信任，通过网络支持你的思想，你就很难推广一个项目。所以我需要对这些朋友们说声谢谢，还要感谢位于伯恩的德国学术交流服务DAAD，以及北京的中国教育部，能够在几次经政府批准的中国之行上资助我。在此我就不列举名字了，因为我的网络是在他们的成果基础上建立的，这个网络里的人们都没有安享舒适的生活而是在艰苦的工作。

最后，我以一些科学注解结束前言部分的介绍。在一些特定的细节上，之前我关于自然界经济金融系统的研究，包括20世纪70年代创立的一个环境和社会的投入—产出表以及20世纪90年代研究经济目标和环保目标的相容性。这两个分析，都是在列昂惕夫投入—产出理论的基础上，得到了一些限制环境污染的积极结果（Maier, 1976），并且描述相应的未来平衡国家经济发展和环境保护的政治途径（Maier, 2000）。然而，现阶段的调查只是部分地基于投入—产出理论，它本身具有很大的创新性，但是仍缺乏革命性，这在某种程度上使我怀疑一些单一学科的学者们。虽然我质疑那些通常的想象自然系统与经济学无关，虽然我能将经济学中的教条（只有）“稀缺物品”才具有价格，简单地替换成“任何物品”都具有价格，但我能够把经济学理论中关于“稀缺物品”的分配和分布的范围扩展到“任何物品”的分配和分布。主要的创新之处是不同的。

直到现在，例如在一个行星系统中，我就可以用经济学审视环境乃至整个自然了，甚至还可以观察次级的卫星系统。我是多么骄傲啊！在目前的调查研究中，我把重心放在自然系统上，并且观察作为附属于“卫星系统”的人类自然系统，这就足够了。由于以往所受的教育和职业生涯，我一向认为交叉学科是我的强项。然而，当我再次用一双学科交叉导向的经济学之眼观察这个系统时，我深感惭愧——如此之晚才发现这个入口！不过无论如何，现在还不算太迟。

Helmut Maier

2006年3月于四川成都

Foreword

The present introduction to nature's economic and financial system I tried to write like a precisely documented report about a journey in an up to now unknown natural countryside the existence of which I supposed. I kindly invite readers to accompany me with this journey and to share with me the detection, substantiation, and control of surprising and unexpected results about this exciting and adventurous search for this countryside. This search I started in September 2002 on occasion of a professional stay at the Southwestern University of Finance and Economics, SWUFE, in Chengdu in China, caused by a random event, and I would like to tell readers this event. Ahead I want to say this was not my first stay in China, but on all stays since 1995 I liked to walk over the markets, especially the food markets, and I did it whenever I could spend time. I enjoyed the big variety of vegetables, fruits, nuts, meat, fishes, and spices, many of them unknown to me before. I enjoyed the kindness of mostly poor people, traders, workmen, tailors, and farmers, the latter coming soon in the morning from outside with their goods. I was impressed by their skills and diligence to supply and arrange this food and other goods with simplest tools, by their hard work during the whole day resting a little in the afternoon near their goods, and I was attracted by their modesty and politeness. My first idea to take pictures I rejected, this would have disturbed the scenes, and I did not dare to do this. So I absorbed these impressions by my eyes and wrote them down in letters to my family and mostly aged relatives. I saw chicken, cocks, ducks, and rabbits, in, above and around cages, and tubs of different size full with fishes. With shudder I saw, too, how these people with the same kindness and diligence selected, weighted, bargained, sold, butchered, and prepared these animals for cooking when customers asked. It happened when I passed a stall with poultry cages that I saw a trader, a young woman, holding up two beautiful colored and respectable cocks, one a little bit stronger than the other, and showed them to a customer. The cocks had strings about their legs, the trader held in each hand one cock by its feet upwards and the head downwards. Both flattered with their wings and tried to escape from this position without success. Gradually they gave up flattering and tried to keep their heads upwards. The stronger cock succeeded in doing this first, its head was now on same height like its feet and it was so close to the unprotected hand of the trader that it could peck her hand with its beak. She must be on the alert, I thought, it will peck her then she will loosen her hand with pain and it will fall down. But this cock did not peck her and this trader did not protect her hand, too. Why this cock does not peck her finger? And why the trader does not protect her hand? I could answer the second question by the empiric knowledge of the trader, but for the behavior of this cock I had no idea. Until now the customer had made no decision. I observed the cocks, the second could no longer hold this position, its head slowly fell down, it tried to come up again but it couldn't. So it

remained quiet in this inescapable position. The head of the stronger cock will fall down very soon, too; I faced its eye and peck which opened. Why it does not use these latest seconds to an attack on her finger I thought. In this moment I got the evident as well as economic answer: It does not peck her because it is then able to hold its head longer upwards. By pecking it would lose more *energy* but it spends its last *money* to keep its head upwards in a dignified position. An intuitive slip of my thoughts identified energy and money! Nearly simultaneously the head of this second cock fall down too, it flattered weakly to come up again but it couldn't and it remained quiet, too. As if the customer had waited for this moment the bargaining ended, and he bought both. He gave a bigger note, and he got back some smaller ones. Now they will be butchered I thought and I decided to look still at this me shuddering event. But the customer took the two, through them in a basket behind the seat of his bike and rode away. These cocks will not be butchered I thought he wants to have them for hens and young chickens. So the use of their last energy to hold up their heads in a dignified position and not to peck just now has saved their lives. Could energy be equivalent of money within the nature? Since this event this idea is present with me! I could not escape from her appeal, she created the bridge over which I entered the natural economic and financial system, which is the above called unknown countryside, which is yet known to us as environment and nature, the unknown side of which readers may explore with me.

Still in September 2002 I bundled all my energy and draw up a fragmentary first draft in Chengdu. In August 2003 I presented some results entitled "*What is the money equivalent in the nature? Results of a hedonic approach*" on occasion of the 54th Session of the International Statistical Institute held in Berlin, Germany. I was happy that my youngest son being ten years young and understanding my ideas supported this first presentation by drawings which are still included in this introduction. In September 2003 I elaborated the research during a stay at Renmin University in Beijing, China. Within a sabbatical from April to September 2004 I could deepen the research and enhance the description as well as discuss the present status of research within lectures to colleagues and students at St. Petersburg's University of Finance and Economics in Russia, at University of Nevada in Reno, USA, with United Nations Habitat in Nairobi, Kenya, and at National Economic University in Kiev, Ukraine. I got useful questions and comments which flagellated me to search for more. In the meantime I presented the idea of nature's well functioning economic and financial system on international conferences in Minneapolis, Paris, Prague, Beijing, and within the so - called *Socrates Program* of European Union in Poland. The present status of research I elaborated again with visits and lectures to students in September 2005 and March 2006 at SWUFE in Chengdu. Why I tell this? Simply to inform readers that you never can promote a project like this without influential friends who trust you and support your ideas within a network at each local position. I say thanks to these friends, and I say thanks to the German Academic Exchange Service DAAD in Bonn, Germany, as well as to the Chinese Ministry of Education in Beijing, China, which sponsored several stays in China within a

Government Agreement between China and Germany I do not mention names because my experience is that networks are fostered best by naming their products and not names of the mostly modest living but tough and diligent working persons within a network.

I end on a personal scientific note. In certain respects this present research about nature's economic and financial system continues my former research to create input – output tables for environment and society of the 1970th years, and on the compatibility of economic goals and goals of environmental protection in the 1990th years. Both analyses, worked out on basis of Leontief's input – output theory delivered positive results, in defining measures for environmental pollution (Maier, 1976), and in describing political paths into a future status of a national economy where the competing goals of economy and environmental protection are compatible, respectively (Maier, 2000). However, the present investigation partly based on input – output theory as well, is quite more innovative unless *revolutionary* which makes me to some extent suspect in eyes of one – disciplinary fixed colleagues. But although I question the common imagination that the natural system includes no economics, and although I replace the economic dogma that (only) “scarce goods” have a price by simply saying “any good” has its price, hence I extend the scope of economic theory which deals with the allocation and distribution of “scarce goods” to the allocation and distribution of “any good”, the *central innovation* is different. Up to now and like in a planet system, I centered *economics* and I viewed at environment and entire nature, respectively, as subordinate satellite systems. How arrogantly I was! In the present investigation I *center the natural system* and I look at human economic systems as subordinate satellite systems, which is adequate. But again I look at these systems with eyes of an interdisciplinary oriented economist because due to my education and professional life this has become my skill I think. I feel ashamed that I found this access so late but anyhow it is never too late.

Chengdu March 2006

Helmut Maier

全文摘要

在解释主题、目标和方法之后，第一章论述自然界经济金融系统的特点，介绍自然界经济金融体系的概念，并通过事实证明一个运行良好的自然界经济金融系统，不仅存在货品服务交换，而且具备无形但可测的货币等价物——能量的假设。该自然系统参与者获得不完全信息，任何货品和服务都具有一定的价格。通过观察资料、新古典主义理论和延伸的快乐论方法，从经济市场的角度分析相关的自然现象，包括其货品服务的供给双方和能量的价格规范。同时解释该系统的特点：市场的二元结构、转移支付、国家、法律、税收和补贴。根据“投入—产出之父”W. Leontief的理论，笔者构建并解释了一个自然经济系统的投入—产出表，证明一个生物因何又如何为生命提供能生存下去的资金，同时描述了维持系统运行的动力。结论：人类种群生存于国家的经济金融系统之中，同时也受自然界经济金融系统支配，这两个系统是相互作用的。

第二章论述自然经济系统和人类经济系统间的分歧和相互作用，涉及联合国的国民核算体系（SNA）和一个等价的人口账户体系的主要目标与指标的本质（不要与所谓的绿色国内生产总值相混淆），这部分介绍解释了自然界和人类经济金融体系的不同。它证实了自然系统的优势：其最高目标（保护生命）是更为优越的，其货币（能量）的等值性是普遍适用的，其主要指标（社会经济的生物指标）比基于价格的金钱更适于衡量社会和个人的特征，因为金钱不会去衡量荒地的价值。由于无法解释自然和人类这两个系统的联系——这两个系统都会分别在不同系统中作用和反应，因此留下了可解释但迄今未知的（和无意识的）关乎社会和自然现象的线索。这些线索已经被社会和自然现象证实并解释：世界人口的拥挤现象、人口老龄化、移民、贫困、失业和物种灭绝，区域破坏和气候变化（大体上）是更高级的自然系统反作用于卓越的人类经济行为的体现。结果产生了对目前社会和环境问题的不同的理解、结论和假说：社会宪政国家——错误地声称自由——单方面定义和实施人权和法律，这些从长远来说，挑战了可持续发展的自然系统对于所有的人类和其他物种的反应。这些反应是对人类社会巨大的挑战，它们必将被现在和将来的政治策略所解答，并且由于乐观地了解到目前人类物种的灵活性要优于其他的物种，因此这些挑战对于人类社会来说未必是不可避免的。

第三章，论述解决差异和社会挑战的政策途径，着重讨论并揭示造成自然的和人类的经济金融系统间显著差异的政治和宪法原因。根据联合国人权大会和德国联邦政府宪法可以确定，两者间存在冲突的原因是由于不同的领导目标、社会转移支付和货币价值。同时从人类社会的未来行为走向这个角度分析如何应对目前存在的分歧和挑战；这部分列出了两个方案以供反思和讨论：“适应更高级的自然系统”和“信任更高级的人

类灵活性”。两个方案涉及 Stackelberg 的二元理论，但没有考虑法律方面和政治上的可行性问题。第一个方案包括对基本法和自主权进行较大的削减，以此减少两个系统间的明显差异。第二个方案中人类需要运用其强大的灵活性，越久越好，以平衡自然系统对经济活动的反作用力。目前政府和国家关于适应环境和社会问题所做的努力可被归入第二种方案的范畴。

最后一章是结束语，总结了各学科间的研究。包括一篇总结和对研究发现的评价；它考量了经济学理论，政治学和自然科学，特别是生物学、物理学和化学等不同学科间的转换和相互作用。笔者列出一个关于学科间转换的清晰公式，以此激励相关学科的学者，尤其是年轻的科学家们，去控制约束属于他们各自研究领域的（通过经济学转化的）假设和结果。这个控制是非常必要的，仅凭经济学家自身无法完成。证明部分显示该领域未来研究具有广泛而巨大的潜力和推动力。纠错部分表明文章仍需进一步地修改，因此任何实质性的提示都有所助益。结束部分是对迄今为止笔者收到的各方提出的问题及评论的答复。

Abstract

After explaining subject, aims, and approach, this introduction to nature's economic and financial system substantiates in a first part, *Features of nature's economic and financial system*, the hypothesis of a well functioning economic and financial system within the nature which is not only based on a mere exchange of goods and services but also on a non - visible but measurable equivalent of money which is energy. This natural system works with uncompleted information of participants, and any good and service has its price. Using observations, neo - classical theory, and an extension of hedonic methods, the analysis identifies certain natural phenomena as economic markets with supply of and demand for goods and services, and the price specification energy. It explains characteristics of this system: the dual structure of its markets, the transfer of payments, banks and the central bank, state, laws, taxes, subsidies. According Leontief's theory, it creates and explains an input - output table of nature's economic system, it substantiates why and how a creature can finance its life and hence can exist at all, and it describes the driving forces of this system. Conclusion: Human populations are subjected to nature's economic and financial system as well as to the economic and financial system of the state in which they live, both systems are interacting.

In a second part, *Disparities and interactions between nature's and human systems*, referring to leading aims and indicators of System of National Account SNA of United Nations and of an equivalent System of Population's Account (not to confuse with the so - called Green Gross Domestic Product) in the nature, this introduction explains some disparities between nature's and human economic and financial systems. It substantiates the predominance of the natural system: its top aim (conservation of life) is superior, its equivalent of money (energy) is universally usable, its leading indicators (socio - biometric indicators) are more appropriate to measure the societal and individual feature than money based figures, and it does not know waste. Because of the unsolvable linkage between nature's and human systems both systems act and react, respectively, on actions and reactions in the different system, and hence leave tracks which can be identified as until now unknown (and unintended) social and natural phenomena. It is substantiated that and why the social and natural phenomena: crowding of world population, demographic ageing, migrations, poverty, unemployment, and distinction of species, devastation of regions, change of climate (mainly) are reactions of the superior natural system on economic actions of the predominant man's species. Result is a different understanding of present social and environmental problems as well as the conclusion and hypothesis, respectively, that the social constitutional state - erroneously claiming freedoms - unilaterally defined and implemented human rights and laws which challenge sustainable reactions of the superior natural

system in the long run on all populations and species, respectively. These sustainable reactions of the natural system include big challenges to human society to be answered by politics in present and future, and the positive insight that in present human species' flexibility is superior to the flexibility of different species; hence these challenges don't look inescapable for human society.

In a third part, *Political approaches to meet disparities and social challenges*, this introduction discusses political and constitutional reasons for the disclosed disparities between nature's and human economic and financial systems. Referring to the Convention of Human Rights of United Nations and the Constitutional Law of the Federal Republic of Germany it identifies exemplarily conflicting points caused by leading aims, social transfers, and the value of money. As for the future behavior of human society how to answer to these disparities and challenges, too; this part presents two scenarios: *Adapting to superior natural system*, and *Trusting on superior human flexibility*, for reflection and discussion. Both scenarios refer to Stackelberg's duopoly theory, and they exclude juristic aspects as well as questions of political feasibility. The first scenario includes considerable incisions into basic laws and freedoms in order to reduce obvious disparities between nature's and human systems. In the second scenario human species uses its superior flexibility to balance reactions of the natural system on its economic activities, as long as possible. Present efforts of governments and states to meet environmental and social problems can be identified as actions within this second scenario

In a final part, *Closing remarks*, this interdisciplinary research includes a summary and an evaluation of the findings; it considers interfaces to and impact on different disciplines, on economic theory, on politics, and on natural sciences, especially biology, physics, and chemistry. A clear formulation of these interfaces is made to encourage scientists of related disciplines, especially young scientists, to control those results and hypotheses of this investigation which are (by translation from economics) part of their own discipline. This control is necessary, and it can't be done by the economist himself. In case of verification there is a wide field for further research, and there are a lot of impulses, too. In case of falsification there is a need for revision, any substantial hint is useful. This part ends with answers to questions and comments up to now.

目 录

■ 导论	1
自然界经济系统的概念	
通向自然界经济系统的桥梁	
社会现象的不同解释	
对目前面临诸多社会挑战的不同回答	
一个波斯寓言	
方法简评	
■ 第一部分 论自然界经济金融系统的特点	7
1.1 对价格规范的解释	7
识别市场规范	7
对度量单位的评论	8
支付含义的探寻	8
对成本控制的评论	9
需求行为的控制	9
二元市场和转移支付的探寻	10
小结	13
1.2 系统基本特征的解释	13
市场的特征	13
支付的特征	15
银行系统	16
国家和税收	17
小结	17
1.3 不同现象的经验性解释	18
蜜蜂采花蜜	18
从树上采摘苹果和吃苹果	19
在食品市场上买土豆	20

在鳄鱼牙齿间寻找食物的小鸟	20
被狼追逐的鹿群	20
一株被藤缠绕的枫树	21
小结	22
<hr/>	
1.4 分析性论证	22
分析性论证的作用	22
方法	23
记法的注释	23
标号的列表	24
食品市场	25
二元运输市场	26
二元市场的耦合和闭合	29
小结	31
<hr/>	
1.5 投入—产出矩阵的设计	32
方法	32
交易矩阵	33
成本类型	34
收益类型	37
分析性描述	42
小结	49
<hr/>	
1.6 讨论和结论	50
<hr/>	
■ 第二部分 论自然经济系统和人类经济系统间的分歧和相互作用	53
<hr/>	
2.1 两个系统间的差异	53
社会经济系统的首要目标	57
货币价值	59
垃圾问题	59
小结与简评	59
<hr/>	
2.2 两个系统间的相互作用	60
对人口爆炸的解释	60

对迁徙的解释	62
对贫困的解释	64
对失业的解释	65
对人口老龄化的解释	65
对气候变化的解释	70
对沙漠产生和物种灭绝的解释	70
<hr/>	
2.3 讨论与结论	71
<hr/>	
■ 第三部分 论解决差异和社会挑战的政策途径	73
3.1 方法途径的概念	73
<hr/>	
3.2 方案“适应更高级的自然系统”	74
<hr/>	
3.3 方案“信任人类更高级的灵活性”	77
<hr/>	
3.4 讨论与结论	80
<hr/>	
■ 结束语	81
发现概要	81
学科约束的必要性	83
不同学科的接口	84
对至今收到的问题和评论的回答	84
<hr/>	
■ 后记	90
<hr/>	
■ 参考文献	94
<hr/>	
■ 附录	97
图片列表	97
表格列表	97

Contents

■ Introduction	99
<i>Vision of an economic system within the nature</i>	
<i>Vision of a bridge to the economic system of the nature</i>	
<i>Vision of different explanations of social phenomena</i>	
<i>Vision of different answers to social challenges of present</i>	
<i>Vision of a Persian parable</i>	
<i>Remarks on the approach</i>	
■ First part Features of nature's economic and financial system	106
1.1 Explaining a price specification	106
<i>Identifying market specifications</i>	
<i>Remark on measuring units</i>	
<i>Detection of a means of payment</i>	
<i>Remark on cost posts</i>	
<i>Control of demand behavior</i>	
<i>Detection of dual market and transfer of payment</i>	
<i>Summary</i>	
1.2 Explaining basic characteristics	113
<i>Characteristics of markets</i>	
<i>Characteristics of payments</i>	
<i>Banking system</i>	
<i>State and taxes</i>	
<i>Summary</i>	
1.3 Empiric verification with different phenomena	119
Bees are taking nectar from blossoms	
Picking and eating apples from a tree	
Buying potatoes on a food market	
A bird picks food between the teeth of a crocodile	
Deer are chased by wolves	